South Coast
Air Quality Management District

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NEWS

MATES III
(MULTIPLE AIR TOXICS EXPOSURE STUDY III)

FACT SHEET

What is MATES III?

MATES III is the latest and most sophisticated study ever conducted of toxic air pollution and its health risk in Southern California. The study fulfills a major commitment in AQMD's Environmental Justice program and updates the last major air toxics study (MATES II) conducted seven years ago.

How was the study conducted?

- During a two-year period from April 2004 to March 2006, at 10 fixed sites and five temporary sites (Figure 1,) AQMD collected more than 18,000 air samples and performed 36,500 analyses on these samples.
- AQMD updated air toxic emissions inventories for mobile sources and commercial and industrial facilities and used state-of-the-art air quality modeling techniques.
- AQMD formed a technical advisory group to provide input on which substances to measure, site selection, analysis protocols and methods for estimating levels of diesel particulate matter (PM).

What did the study reveal?

- The study found that while the overall cancer risk from air pollution has declined by more than 15 percent in the last seven years, it is still unacceptably high, currently estimated at 1,200 in a million. This is among the highest in the nation.
- The highest computer-modeled risk level is in the port area with a maximum lifetime cancer risk of up to 2,900 in a million (Figure 2).
- Diesel PM accounts for approximately 84 percent of region-wide cancer risk and mobile sources account for 94 percent of total risk (Figure 3).
- Sites with higher levels of cancer risk due to air toxics include Burbank, downtown Los Angeles, Fontana, Huntington Park and Wilmington. The site with the lowest risk is Anaheim (Figure 4).

What will AQMD do as a result of the MATES III findings?

AQMD staff will solicit public comments on the study for 90 days before finalizing the report. AQMD will also prepare an update to its Air Toxics Control Plan to include strategies to further reduce toxic air pollution and cancer risk based on MATES III findings. The proposed plan will be presented to the AQMD Board this summer.

Figure 1

Fixed Sites   Temporary Sites

Figure 2

MATES III Model Estimated Risk

Figure 3

MATES III Air Toxics Risk

Basinwide Risk: 1194 per million
Based on Average at Fixed Monitoring sites

Figure 4

MATES III Air Toxics Risk
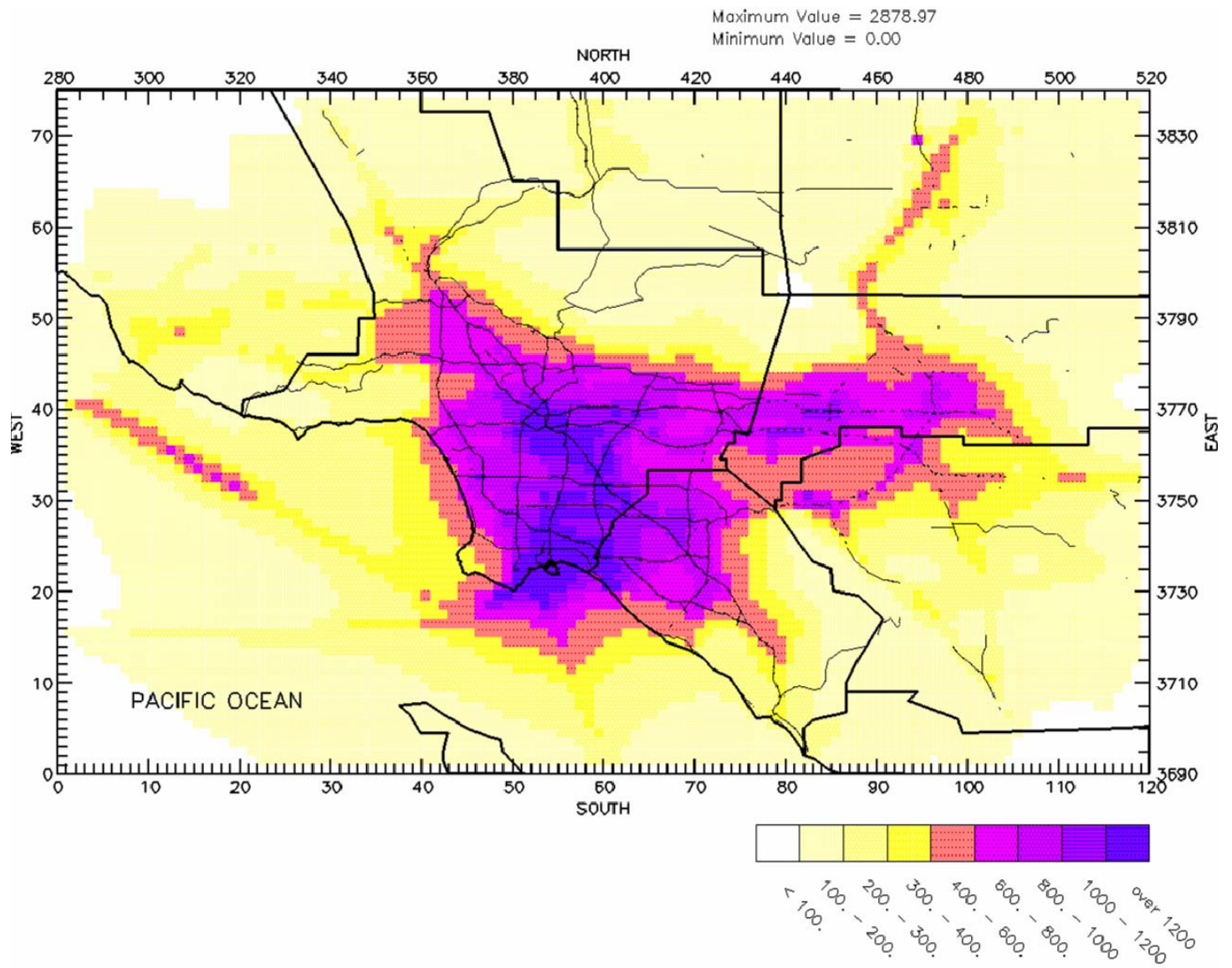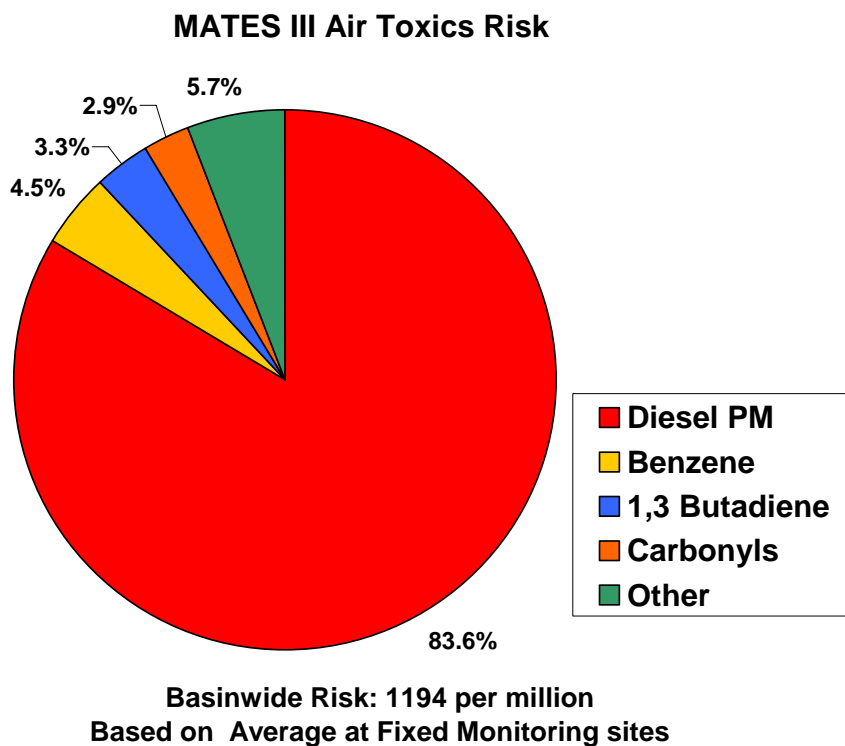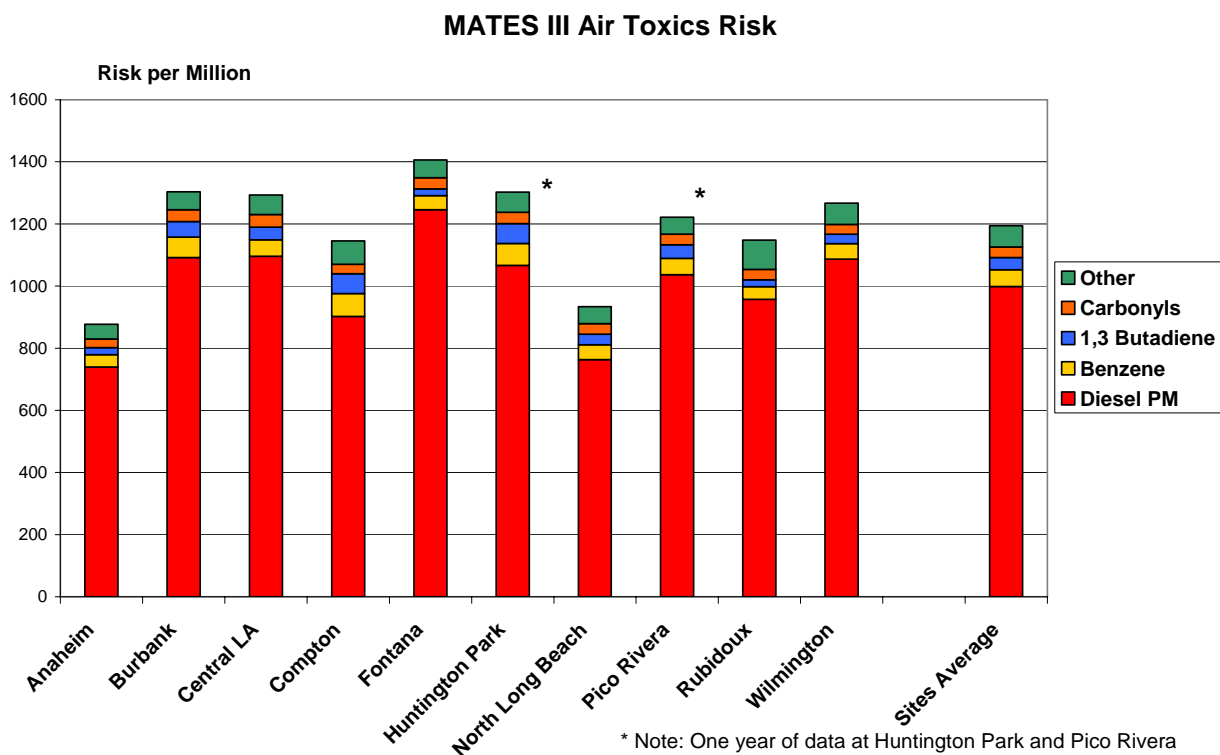

* Note: One year of data at Huntington Park and Pico Rivera

Which toxic compounds were monitored and how frequently?

AQMD monitored the following 33 toxic compounds once every three days at each site.

Acetaldehyde	Hexavalent Chromium	Organic Carbon
Acetone	Copper	PAHs
Arsenic	Dichlorobenzene	$PM_{2.5}$
Benzene	Dichloroethane	PM_{10}
Beryllium	Ethyl Benzene	Perchloroethylene (Tetrachloroethylene)
1,3-Butadiene	Formaldehyde	Styrene
Cadmium	Lead	Toluene
Elemental Carbon	Manganese	Trichloroethylene
Carbon Tetrachloride	Methylene Chloride	Vinyl Chloride
Chloroform	Naphthalene	Xylene
Chloromethane	Nickel	Zinc

Why did monitoring last for two years?

The MATES III monitoring program initially was designed to last 12 months. However due to heavy rainstorms during the winter portion of the sampling period, AQMD extended the sampling for an additional 12 months, for a total of 24 continuous months of sampling. Results comparing the first and second years of sampling showed that levels of toxic air pollution were lower during the first year due to stormy weather.

How does MATES III differ from previous air toxics studies?
Air sampling during MATES III lasted longer and occurred more frequently than in previous studies. Sampling lasted two years and occurred once every three days compared to once every six days in previous studies. Sampling included monitoring for additional compounds including naphthalene and organic substances used as tracers to identify major sources of particulates.

What new scientific techniques were used to quantify cancer risk?
MATES III used state-of-the-art methods including a chemical mass-balance model to estimate levels of diesel particulates in outdoor air. The model is based on chemical profiles of major emissions sources in the region, in addition to elemental carbon. MATES II used only elemental carbon to estimate diesel particulate levels.

What were the major components of the study?
In addition to air monitoring, AQMD used an updated emissions inventory for air toxics developed for the 2007 Air Quality Management Plan to estimate air toxics and dispersion of pollution to better estimate risk throughout the region. An improved geographical model developed by the Southern California Association of Governments was used to better estimate the geographical distribution of truck emissions throughout the region.

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